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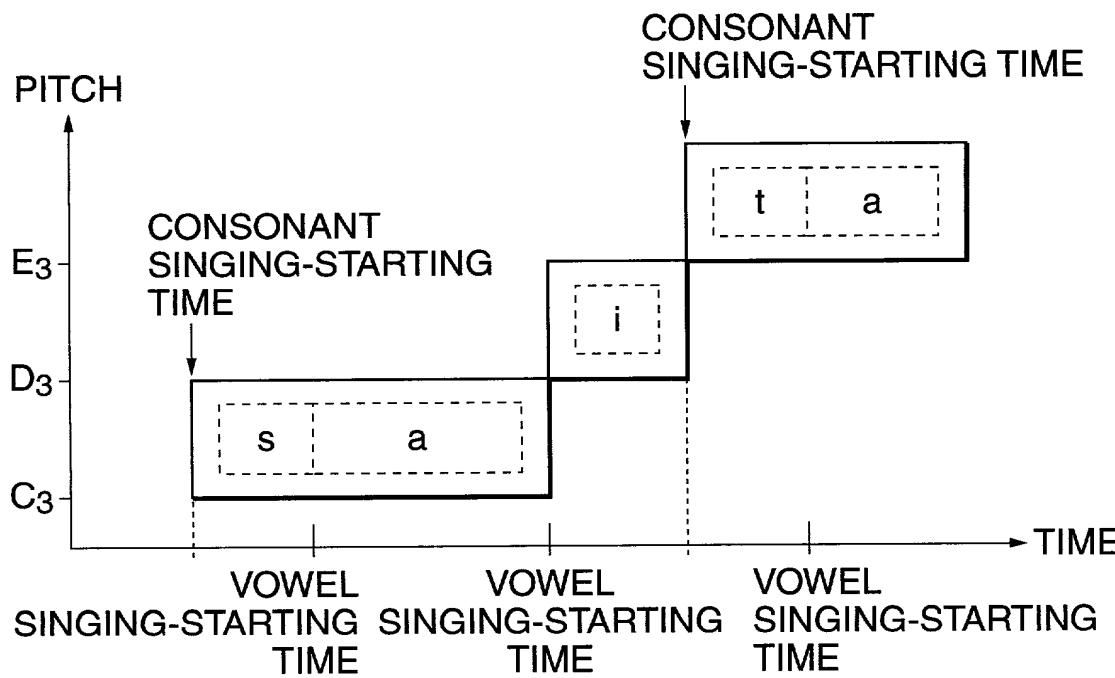
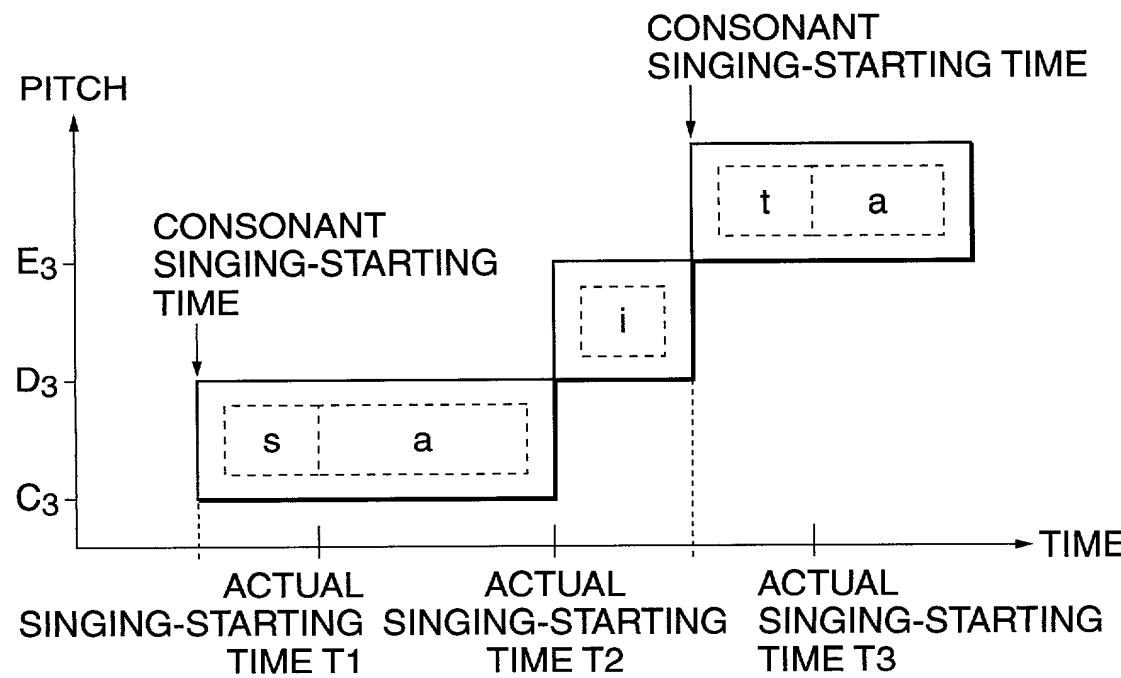
FIG. 1A**FIG. 1B**

FIG. 2

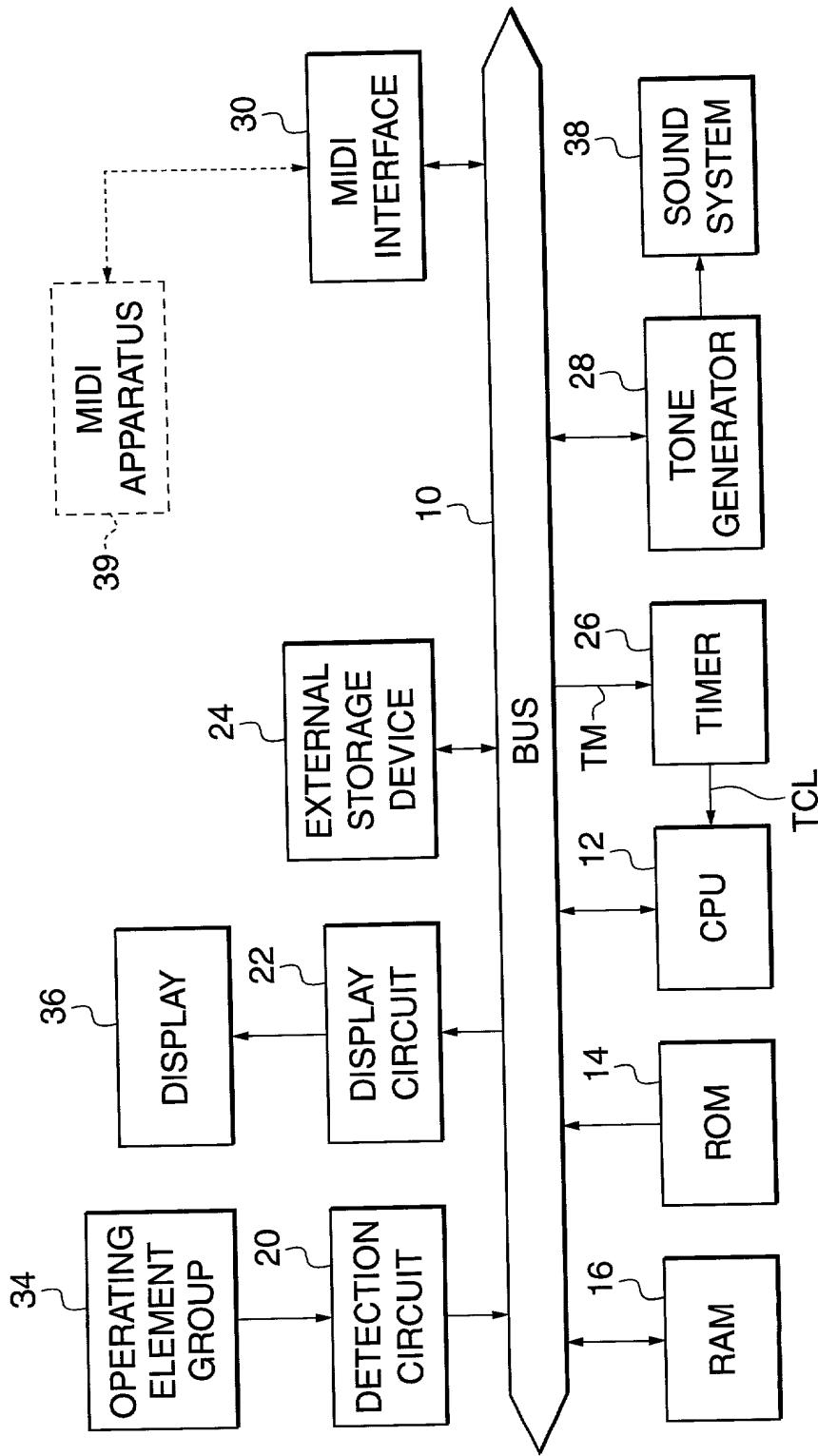
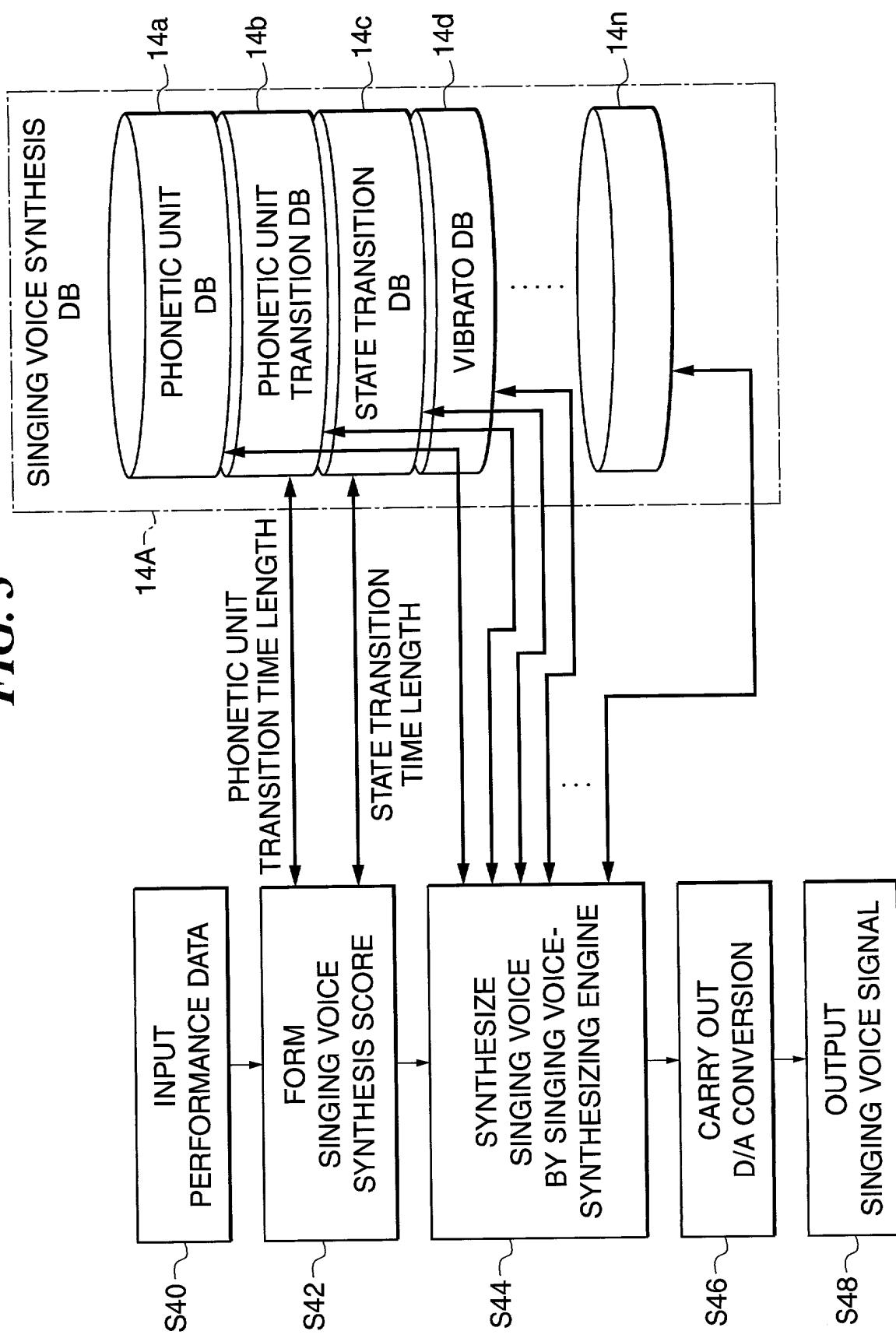


FIG. 3



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FIG. 4

| PERFORMANCE INFORMATION | INFORMATION | EXPLANATION |
|---------------------------------|------------------------|---|
| NOTE INFORMATION | Note On | ACTUAL SINGING-STARTING TIME |
| | Duration | ACTUAL SINGING LENGTH |
| | Pitch | SINGING VOICE PITCH |
| PHONETIC UNIT TRACK INFORMATION | PhU | SINGING PHONETIC UNIT |
| | Consonant Modification | SINGING CONSONANT EXPANSION/COMPRESSION RATIO |
| TRANSITION TRACK INFORMATION | Attack Type | SINGING ATTACK TYPE |
| | Attack Rate | SINGING ATTACK EXPANSION/COMPRESSION RATIO |
| | Release Type | SINGING RELEASE TYPE |
| | Release Rate | SINGING RELEASE EXPANSION/COMPRESSION RATIO |
| | Note Transition Type | SINGING NOTE TRANSITION TYPE |
| | Note Transition Rate | SINGING NOTE TRANSITION EXPANSION/COMPRESSION RATIO |
| | Vibrato Number | NUMBER OF VIBRATO EVENTS IN PERFORMANCE DATA |
| | Vibrato Delay 1 | FIRST VIBRATO DELAY TIME |
| | Vibrato Duration 1 | FIRST VIBRATO DURATION TIME |
| VIBRATO TRACK INFORMATION | Vibrato Type 1 | FIRST VIBRATO TYPE |
| | : | : |
| | Vibrato Delay K | K-TH VIBRATO DELAY TIME |
| | Vibrato Duration K | K-TH VIBRATO DURATION TIME |
| | Vibrato Type K | K-TH VIBRATO TYPE |

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FIG. 5

| VIBRATO TYPE | PITCH | |
|--------------|-------|------------------------------------|
| a | P1 | TONE GENERATOR CONTROL INFORMATION |
| | P2 | TONE GENERATOR CONTROL INFORMATION |
| | ⋮ | ⋮ |
| i | P1 | ⋮ |
| | ⋮ | ⋮ |
| | ⋮ | ⋮ |
| M | ⋮ | ⋮ |
| ⋮ | ⋮ | ⋮ |
| Sil | ⋮ | ⋮ |

FIG. 6A

| PHONETIC UNIT TRANSITION TIME LENGTH | |
|---|---------------------------------|
| (a) | V_Sil TRANSITION TIME LENGTH |
| (b) | Sil_C TRANSITION TIME LENGTH |
| (c) | C_V TRANSITION TIME LENGTH |
| (d) | Sil_V TRANSITION TIME LENGTH |
| (e) | pV_C TRANSITION TIME LENGTH |
| (f) | pV_V TRANSITION TIME LENGTH |

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FIG. 6B

| PRECEDING PHONETIC UNIT | FOLLOWING PHONETIC UNIT | PITCH | | |
|-------------------------|-------------------------|------------|--------------------------------------|------------------------------------|
| a | i | P1 | PHONETIC UNIT TRANSITION TIME LENGTH | TONE GENERATOR CONTROL INFORMATION |
| | | P2 | PHONETIC UNIT TRANSITION TIME LENGTH | TONE GENERATOR CONTROL INFORMATION |
| | | ... | ... | ... |
| | M | P1 | ... | ... |
| | | ... | ... | ... |
| | | ... | ... | ... |
| | Aspiration | ... | | |
| | Sil | ... | | |
| | i | a | ... | |
| | | M | ... | |
| | | ... | ... | |
| | | Aspiration | ... | |
| | | Sil | ... | |
| M | a | ... | | |
| | i | ... | | |
| | ... | ... | | |
| | Aspiration | ... | | |
| | Sil | ... | | |
| | ... | ... | ... | |
| Sil | a | ... | | |
| | i | ... | | |
| | M | ... | | |
| | ... | ... | | |
| | Aspiration | ... | | |

FIG. 7

| TRANSITION STATE | TRANSITION TYPE | PHONETIC UNIT | PITCH | | |
|------------------|-----------------|---------------|-------|------------------------------|------------------------------------|
| Attack | Normal | a | P1 | STATE TRANSITION TIME LENGTH | TONE GENERATOR CONTROL INFORMATION |
| | | | P2 | STATE TRANSITION TIME LENGTH | TONE GENERATOR CONTROL INFORMATION |
| | | | ... | ... | ... |
| | | i | P1 | ... | ... |
| | | | ... | ... | ... |
| | Sexy | M | ... | ... | ... |
| | | ... | ... | ... | ... |
| | | a | ... | ... | ... |
| | | i | ... | ... | ... |
| | Sharp | M | ... | ... | ... |
| | | ... | ... | ... | ... |
| | | a | ... | ... | ... |
| | | i | ... | ... | ... |
| | Soft | M | ... | ... | ... |
| | | ... | ... | ... | ... |
| | | a | ... | ... | ... |
| | | i | ... | ... | ... |
| | | M | ... | ... | ... |
| NtN | Normal | a | ... | ... | ... |
| | | | ... | ... | ... |
| | | | ... | ... | ... |
| Release | Normal | a | ... | ... | ... |
| | | | ... | ... | ... |
| | | | ... | ... | ... |

FIG. 8

| VIBRATO TYPE | PHONETIC UNIT | PITCH | |
|--------------|---------------|-------|------------------------------------|
| Normal | a | P1 | TONE GENERATOR CONTROL INFORMATION |
| | | P2 | TONE GENERATOR CONTROL INFORMATION |
| | | ⋮ | ⋮ |
| | i | P1 | ⋮ |
| | | ⋮ | ⋮ |
| | M | ⋮ | ⋮ |
| | | ⋮ | ⋮ |
| | | ⋮ | ⋮ |
| | | ⋮ | ⋮ |
| | ⋮ | ⋮ | ⋮ |
| Sexy | a | ⋮ | ⋮ |
| | i | ⋮ | ⋮ |
| | M | ⋮ | ⋮ |
| | ⋮ | ⋮ | ⋮ |
| | ⋮ | ⋮ | ⋮ |
| Enka | a | ⋮ | ⋮ |
| | i | ⋮ | ⋮ |
| | M | ⋮ | ⋮ |
| | ⋮ | ⋮ | ⋮ |
| | ⋮ | ⋮ | ⋮ |

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FIG. 9

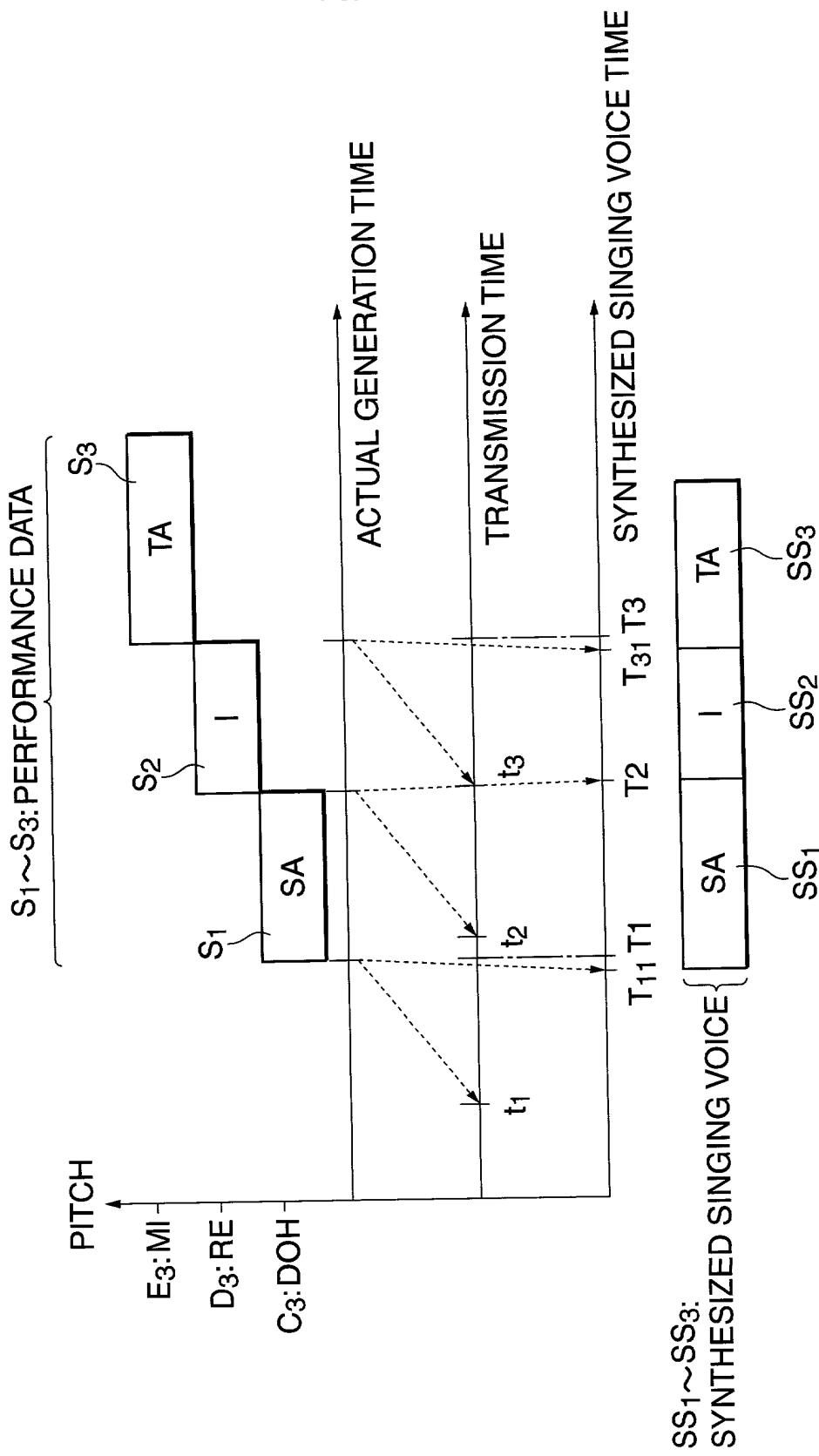


FIG. 10

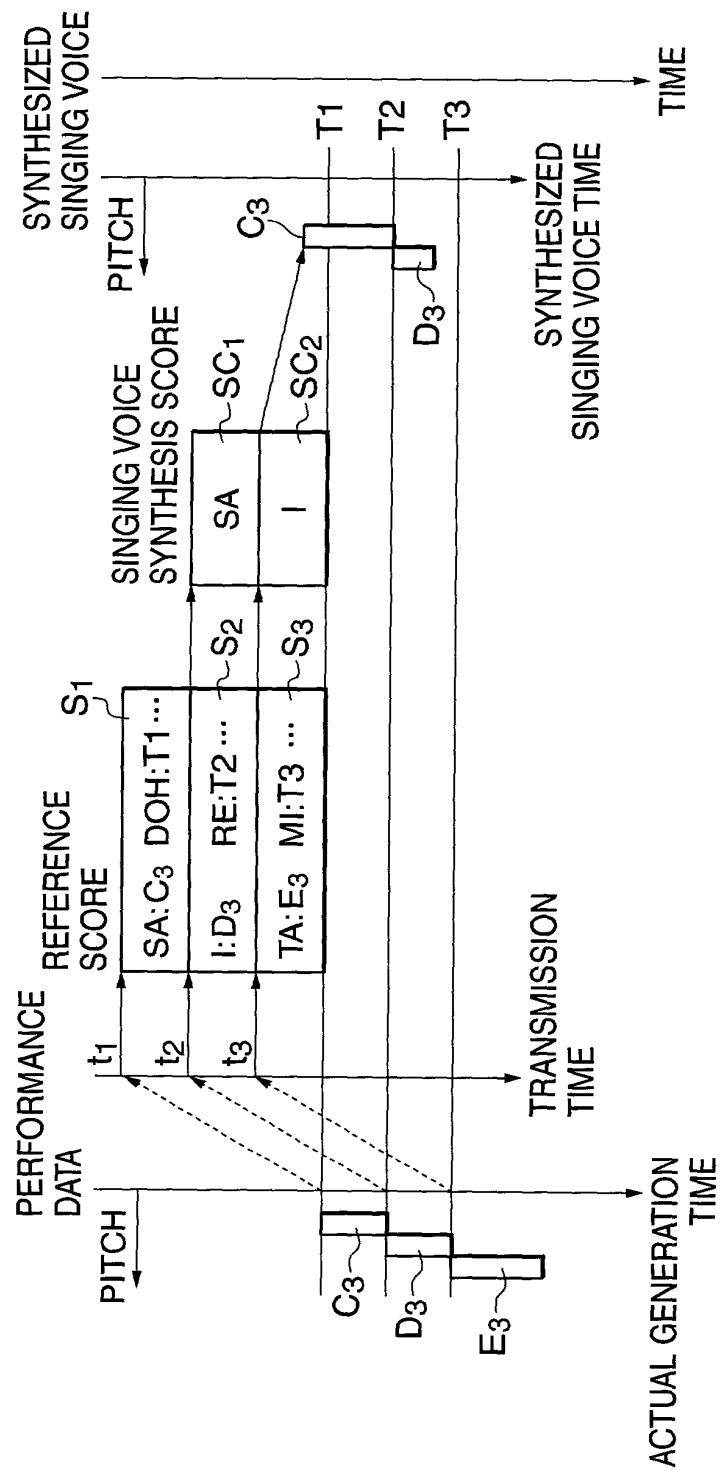
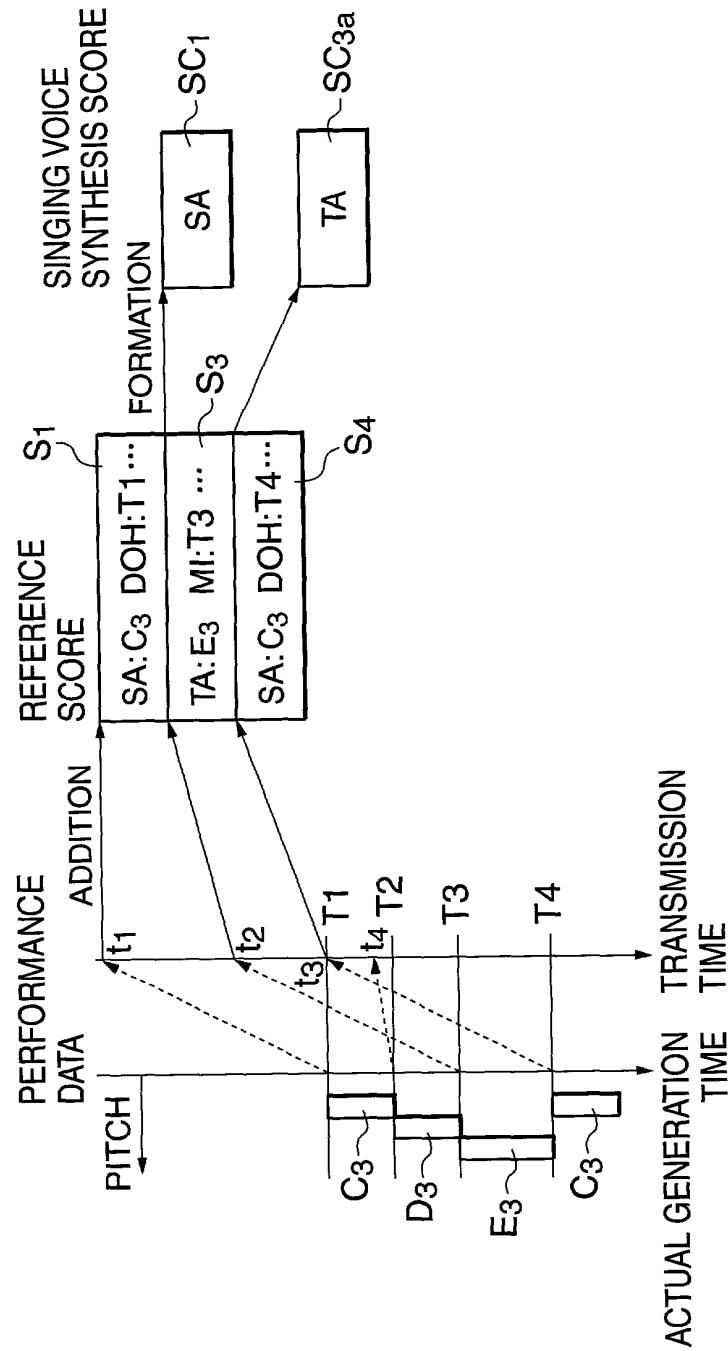
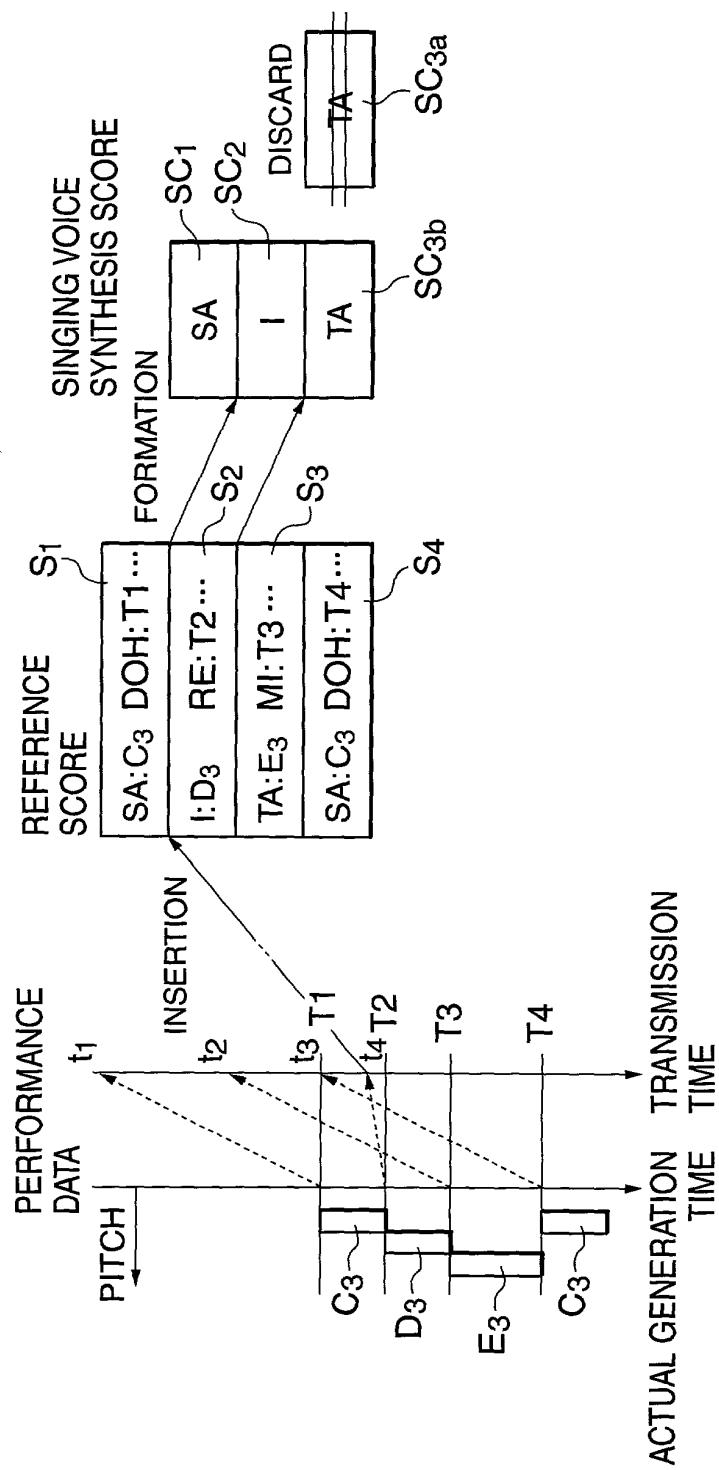


FIG. 11



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FIG. 12



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FIG. 13

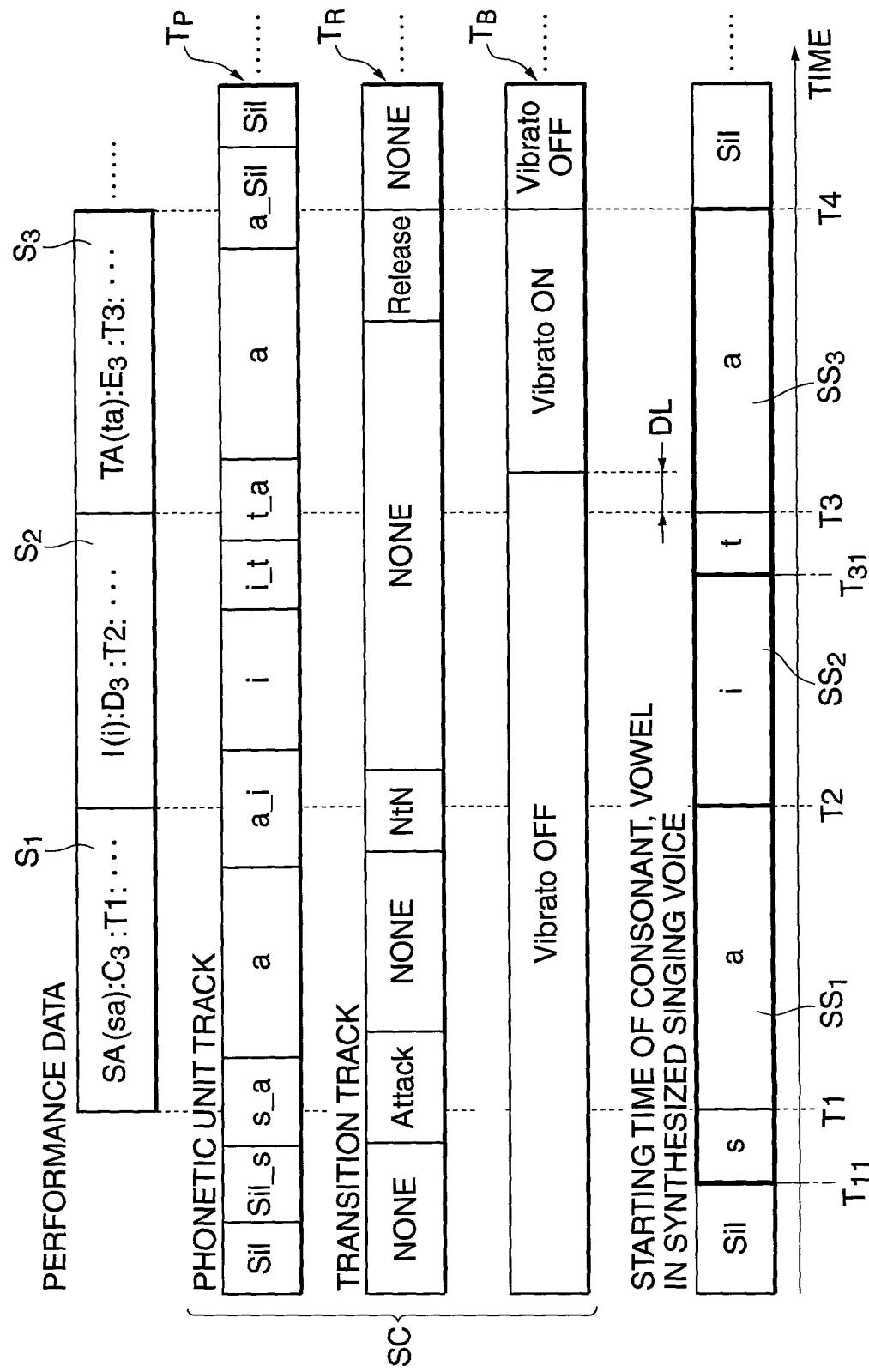


FIG. 14

| ITEMS OF PHONETIC UNIT TRACK T_p | INFORMATION | CONTENTS | EXPLANATION |
|------------------------------------|-------------|----------|---------------|
| Sil | Begin Time | T11 | STARTING TIME |
| | Duration | D11 | DURATION TIME |
| | PhU | Sil | PHONETIC UNIT |
| Sil_s | Begin Time | T12 | STARTING TIME |
| | Duration | D12 | DURATION TIME |
| | PhU1, PhU2 | Sil, s | PHONETIC UNIT |
| s_a | Begin Time | T13 | STARTING TIME |
| | Duration | D13 | DURATION TIME |
| | PhU1, PhU2 | s, a | PHONETIC UNIT |
| a | Begin Time | T14 | STARTING TIME |
| | Duration | D14 | DURATION TIME |
| | PhU | a | PHONETIC UNIT |

FIG. 15

| ITEMS OF TRANSITION TRACK TR | INFORMATION | CONTENTS | EXPLANATION |
|---------------------------------|-------------|--------------------------|--------------------------|
| NONE | Begin Time | T21 | STARTING TIME |
| | Duration | D21 | DURATION TIME |
| | Index | NONE | TRANSITION INDEX |
| Attack | Begin Time | T22 | STARTING TIME |
| | Duration | D22 | DURATION TIME |
| | Index | Attack | TRANSITION INDEX |
| NONE | Type | Type22 | TYPE OF TRANSITION INDEX |
| | Begin Time | T23 | STARTING TIME |
| | Duration | D23 | DURATION TIME |
| NtN | Index | NONE | TRANSITION INDEX |
| | Begin Time | T24 | STARTING TIME |
| | Duration | D24 | DURATION TIME |
| NONE | Index | NtN | TRANSITION INDEX |
| | Type | Type24 | TYPE OF TRANSITION INDEX |
| | Begin Time | T25 | STARTING TIME |
| Release | Duration | D25 | DURATION TIME |
| | Index | NONE | TRANSITION INDEX |
| | Begin Time | T26 | STARTING TIME |
| Release | Duration | D26 | DURATION TIME |
| | Index | Release | TRANSITION INDEX |
| Type | Type26 | TYPE OF TRANSITION INDEX | |

FIG. 16

| ITEMS OF VIBRATO TRACK TB | INFORMATION | CONTENTS | EXPLANATION |
|---------------------------|-------------|----------|-----------------|
| Vibrato OFF | Begin Time | T31 | STARTING TIME |
| | Duration | D31 | DURATION TIME |
| | Index | OFF | INDEX |
| Vibrato ON | Begin Time | T32 | STARTING TIME |
| | Duration | D32 | DURATION TIME |
| | Index | ON | INDEX |
| Vibrato OFF | Type | Type32 | TYPE OF VIBRATO |
| | Begin Time | T33 | STARTING TIME |
| | Duration | D33 | DURATION TIME |
| Vibrato OFF | Index | OFF | INDEX |

FIG. 17

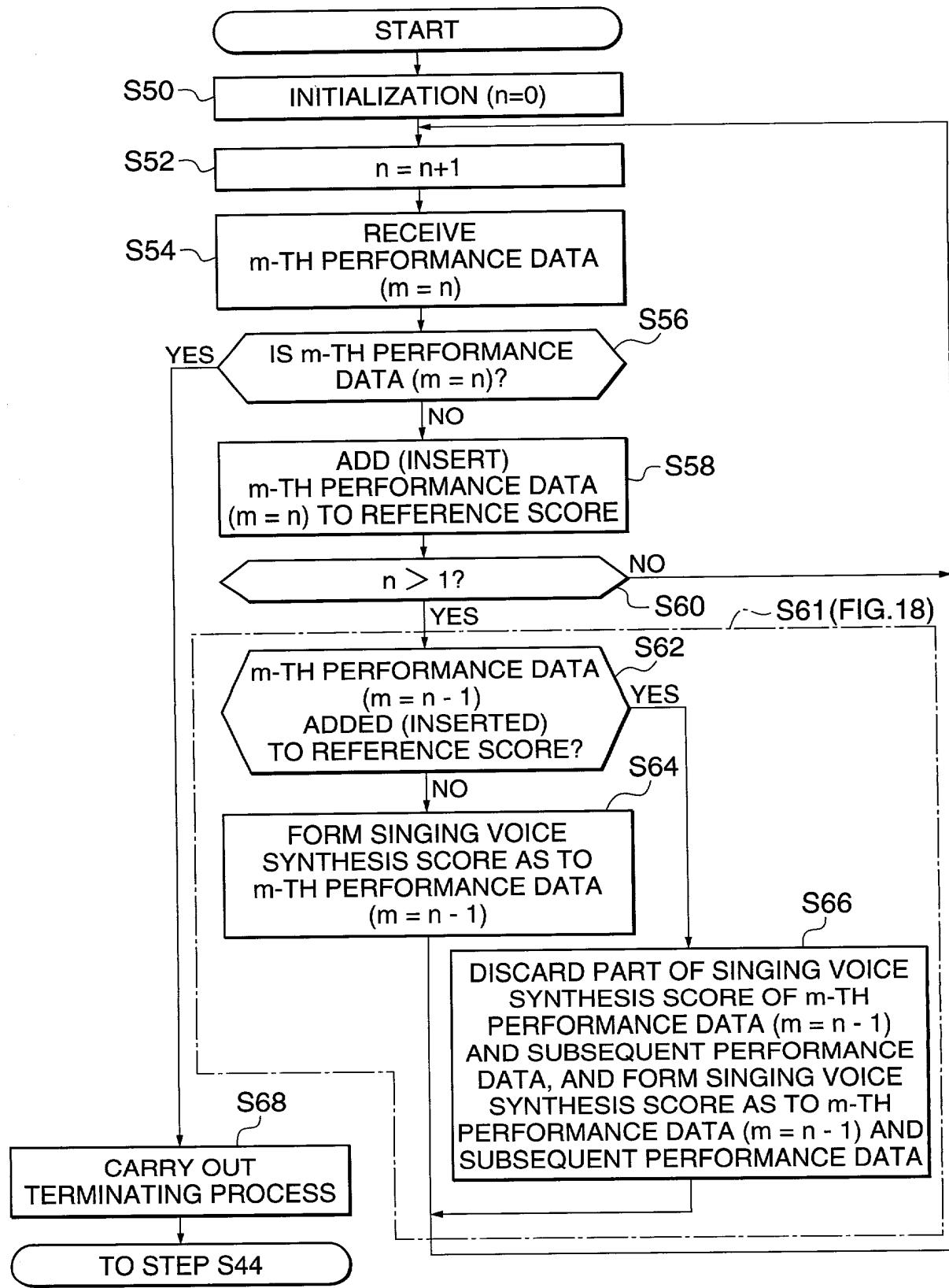
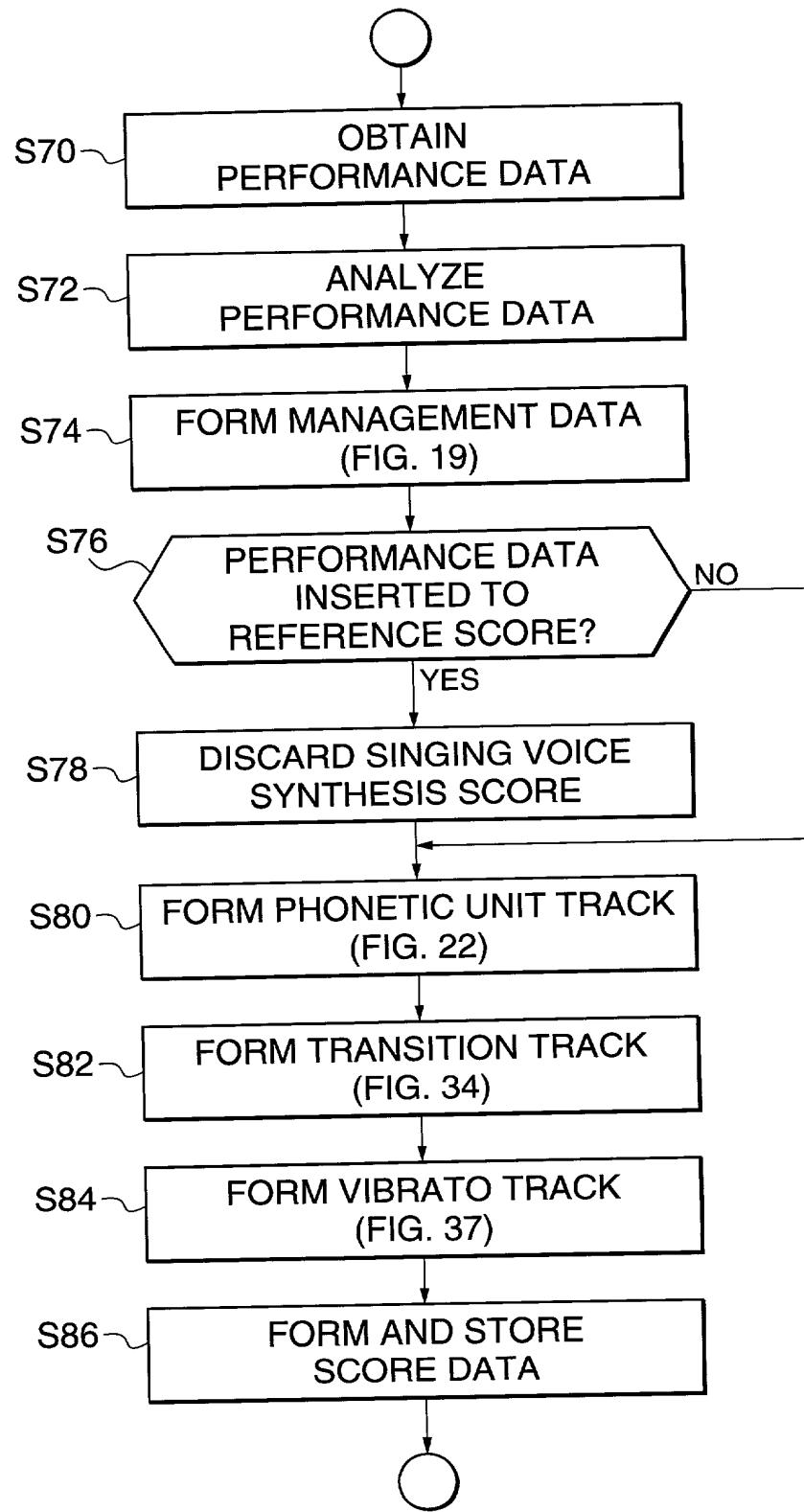


FIG. 18



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FIG. 19

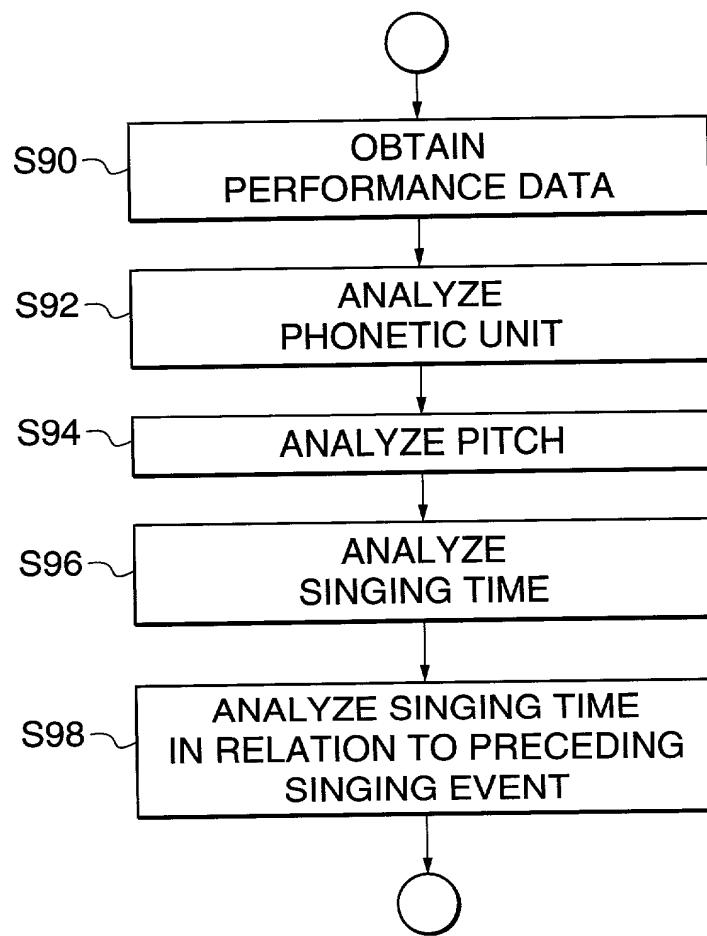


FIG. 20

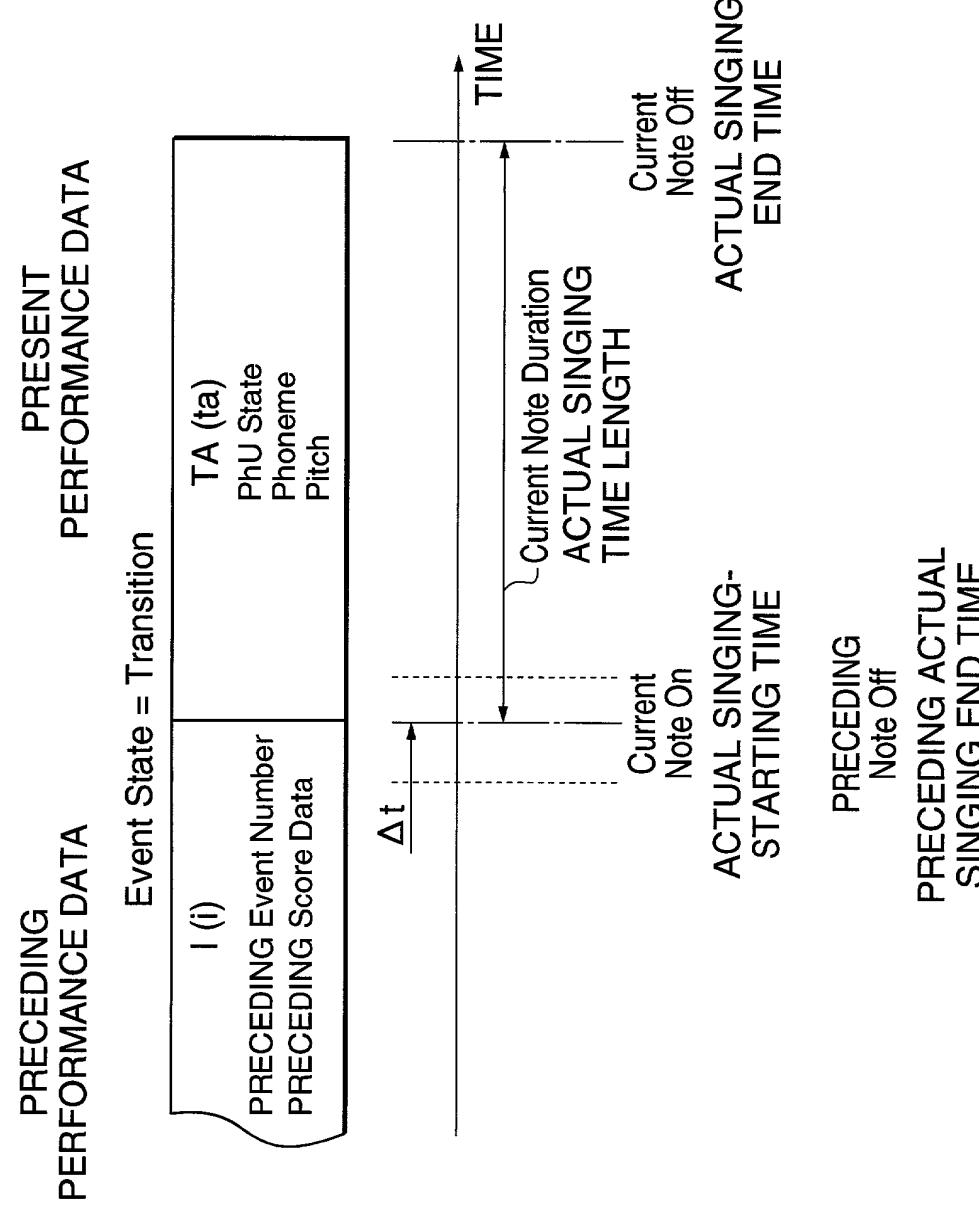


FIG. 21

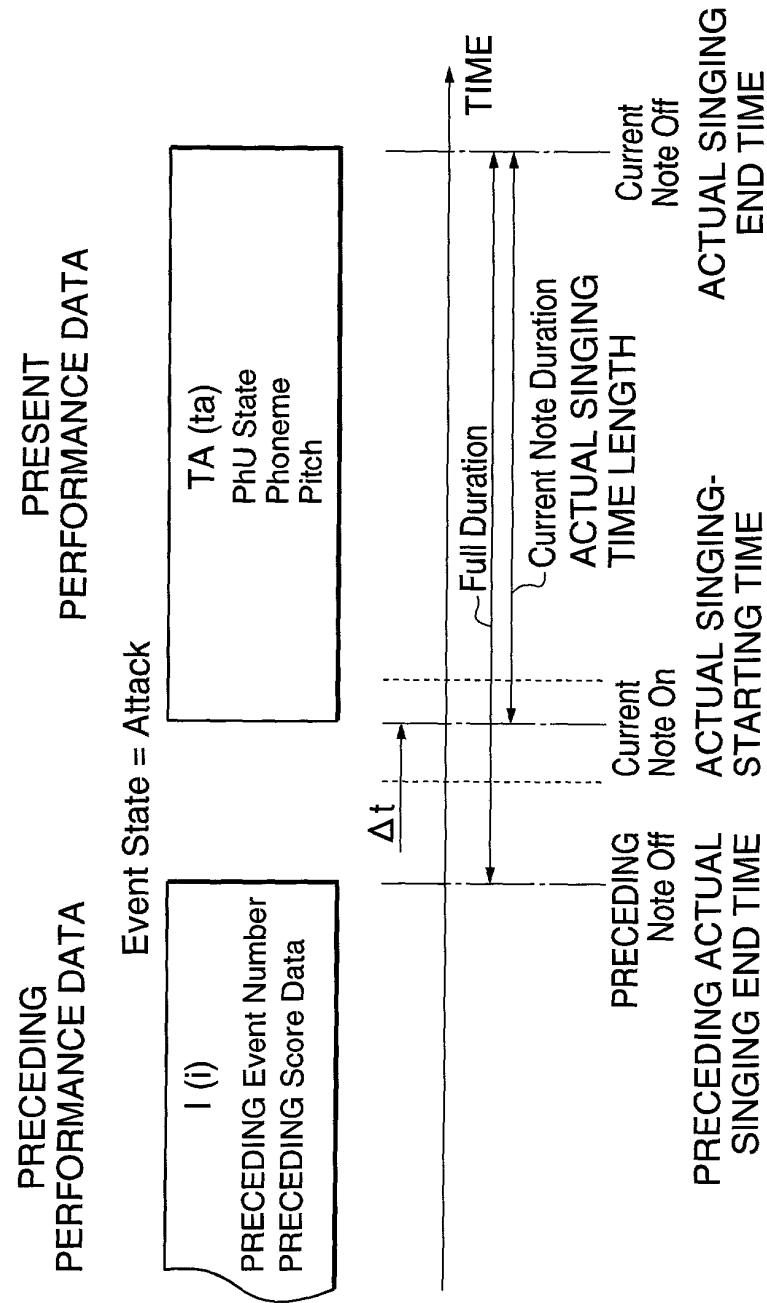


FIG. 22

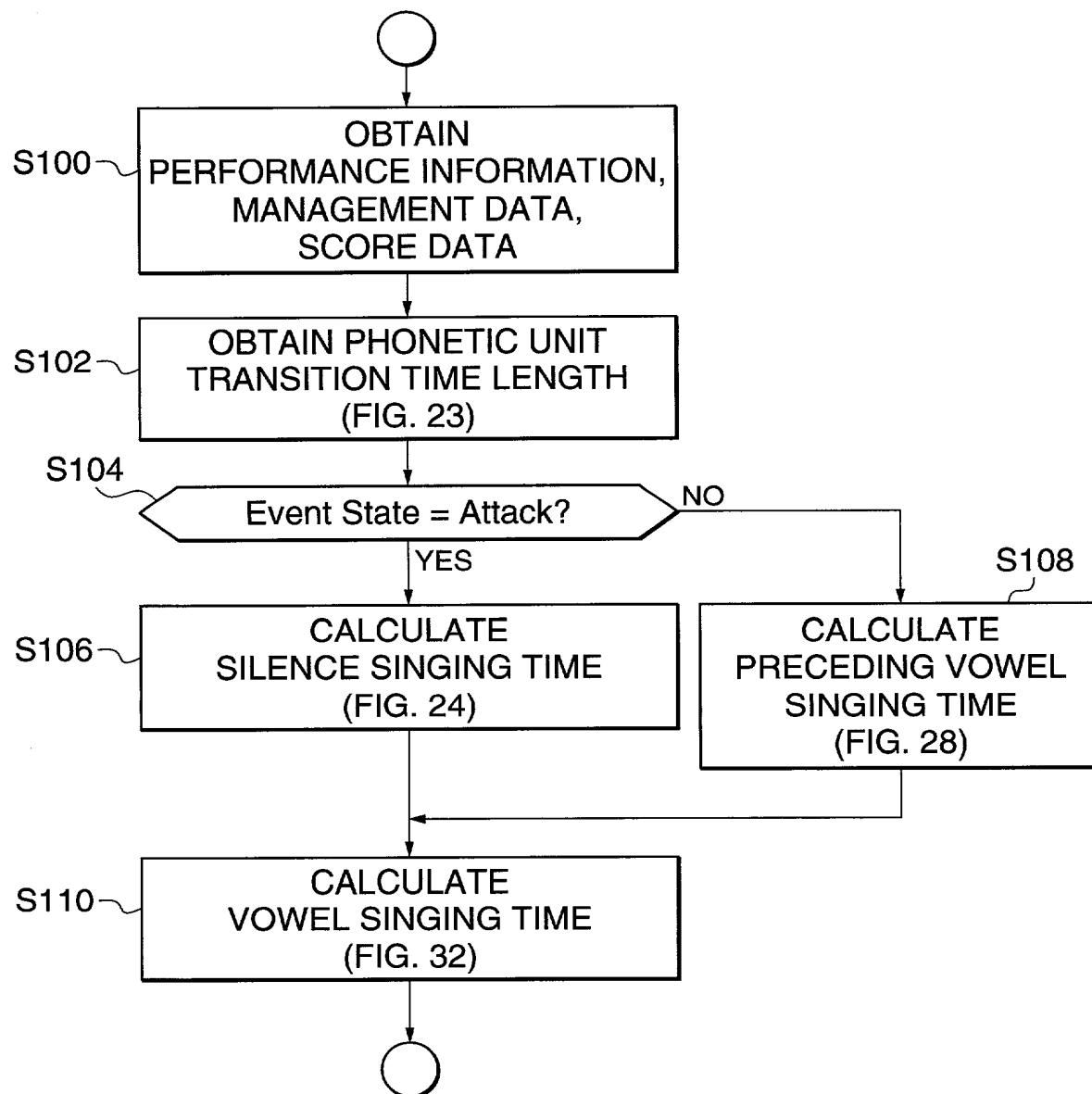


FIG. 23

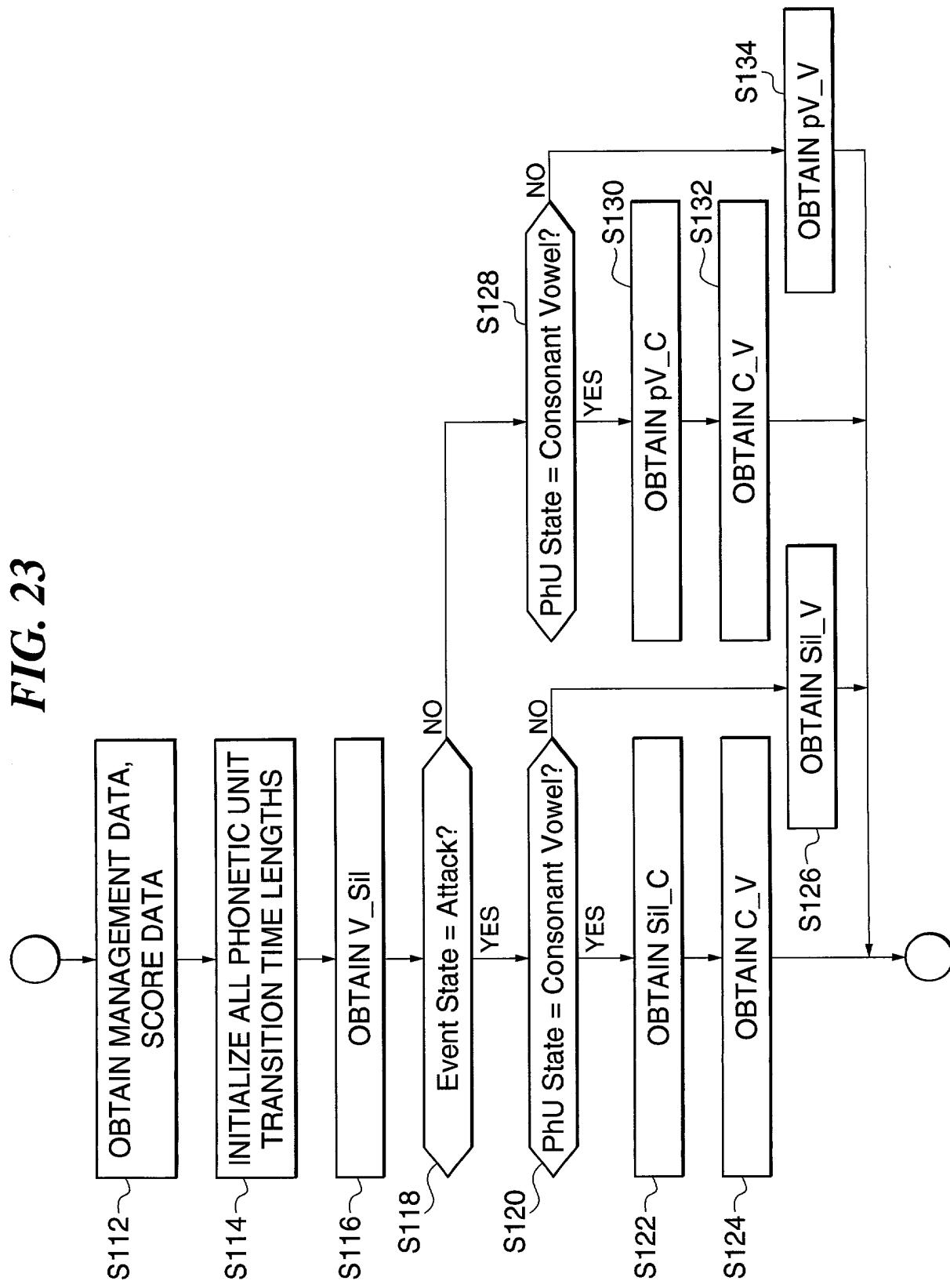
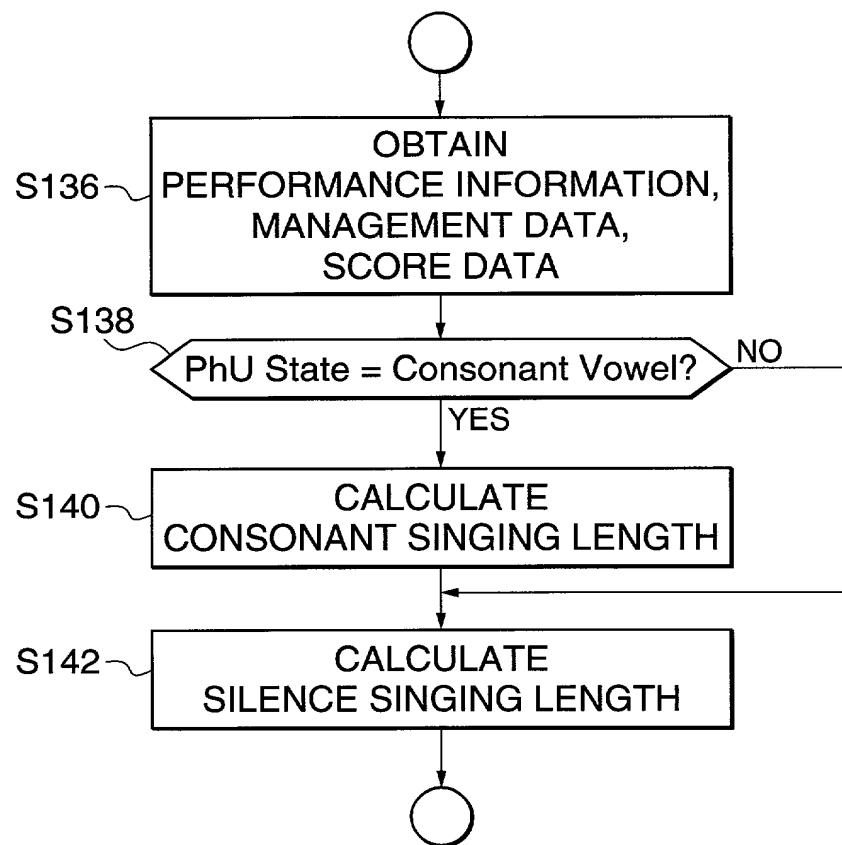
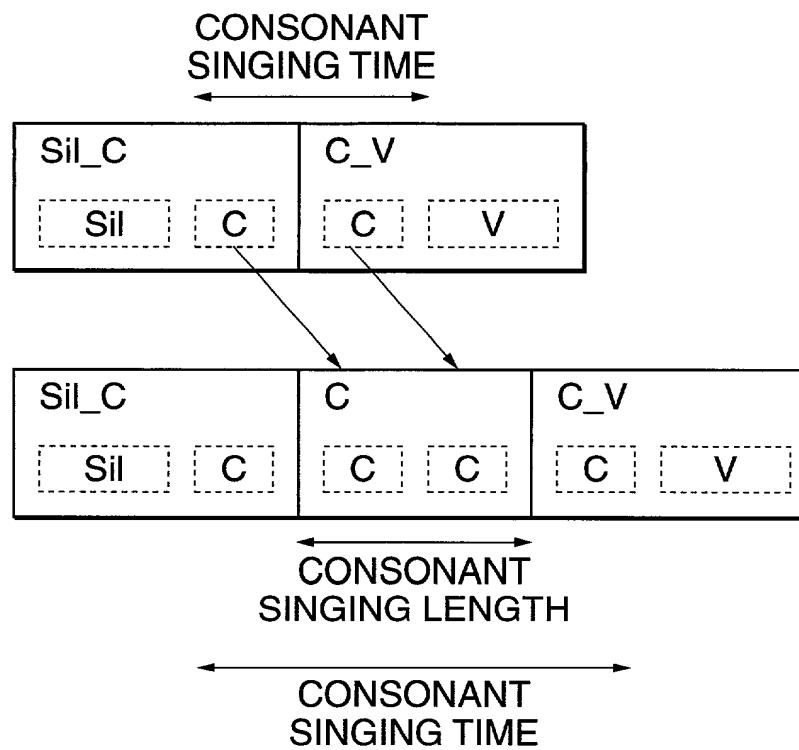
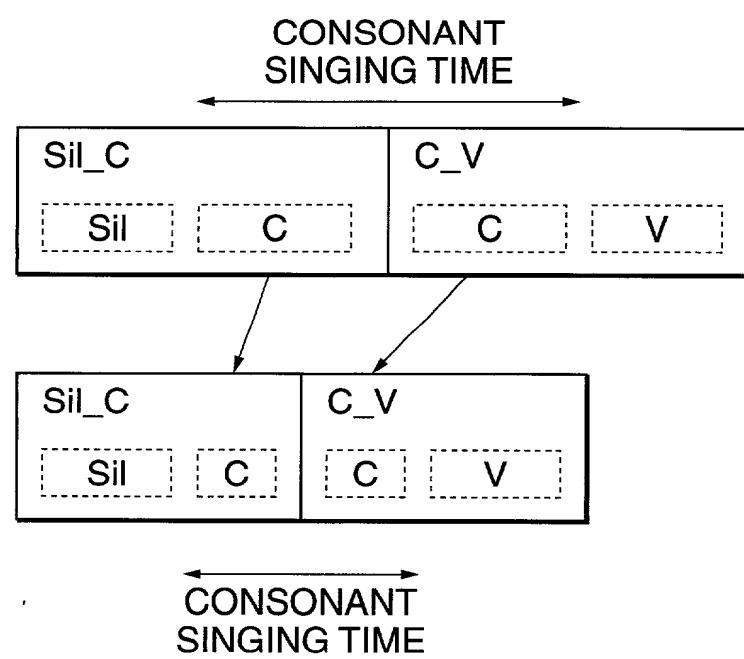


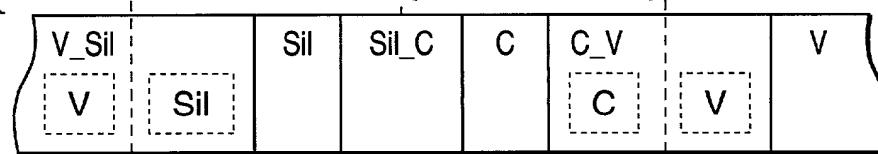
FIG. 24



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FIG. 25**FIG. 26**

CONSONANT SINGING-
STARTING TIME VOWEL SINGING-
STARTING TIME

FIG. 27A

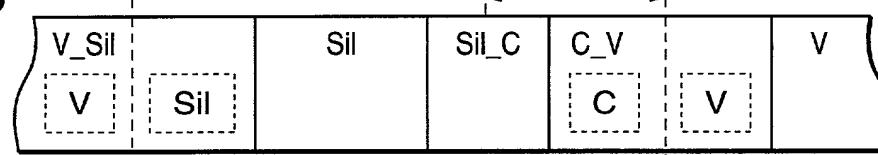
CONSONANT
SINGING TIME

SILENCE SINGING LENGTH

VOWEL SINGING-
STARTING TIME

CONSONANT SINGING-
STARTING TIME

VOWEL SINGING-
STARTING TIME

FIG. 27B

CONSONANT
SINGING TIME

CONSONANT
SINGING TIME

SILENCE SINGING LENGTH

VOWEL SINGING-
STARTING TIME

FIG. 27C

SILENCE SINGING LENGTH

SILENCE TIME

TIME

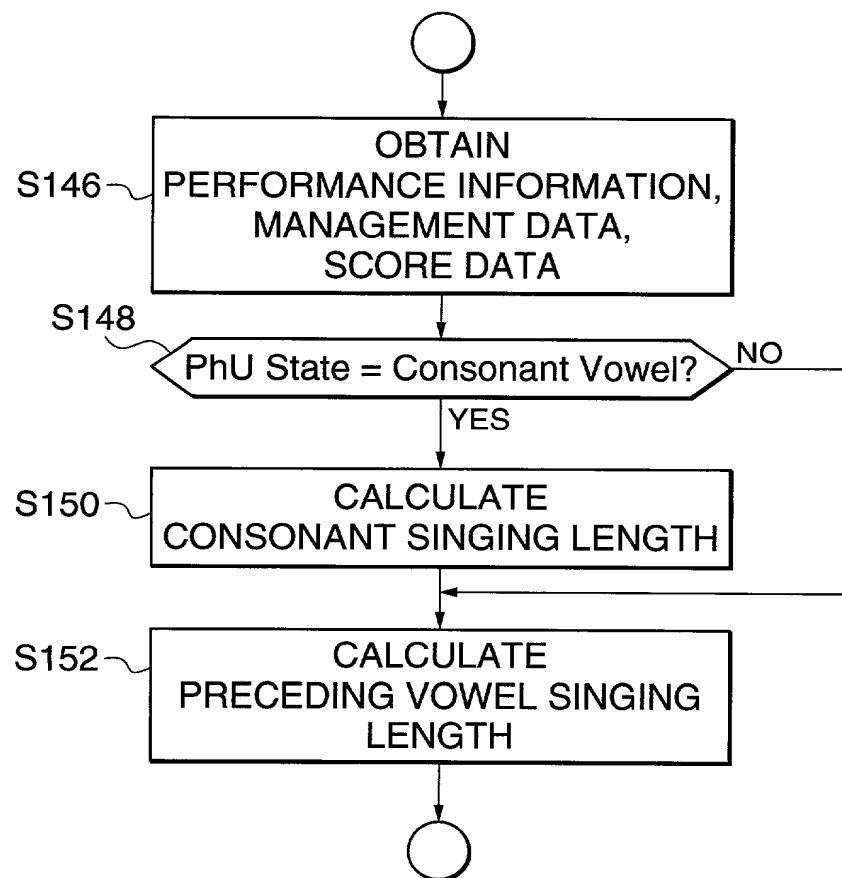
PRECEDING Note Off

Current Note On

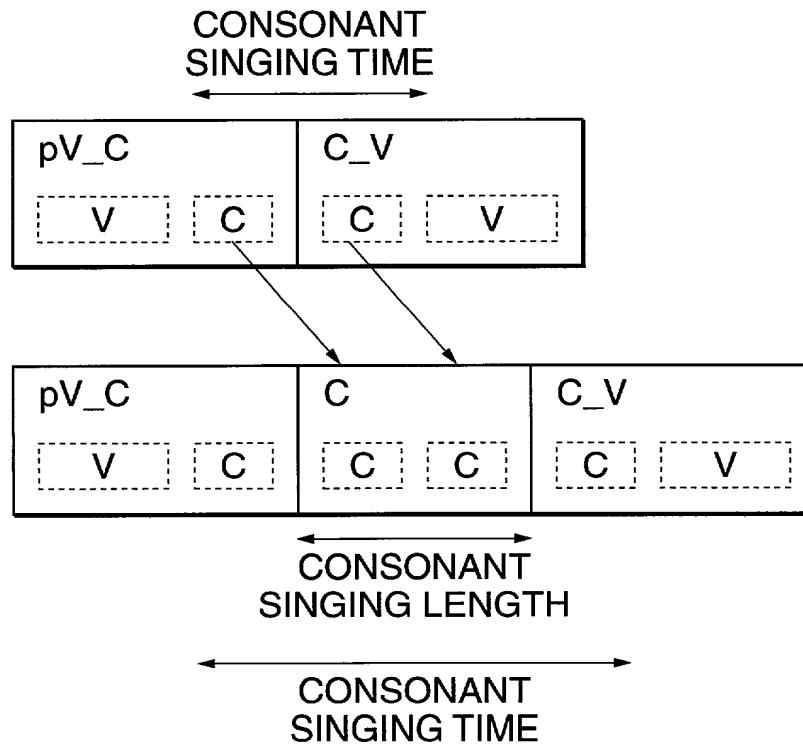
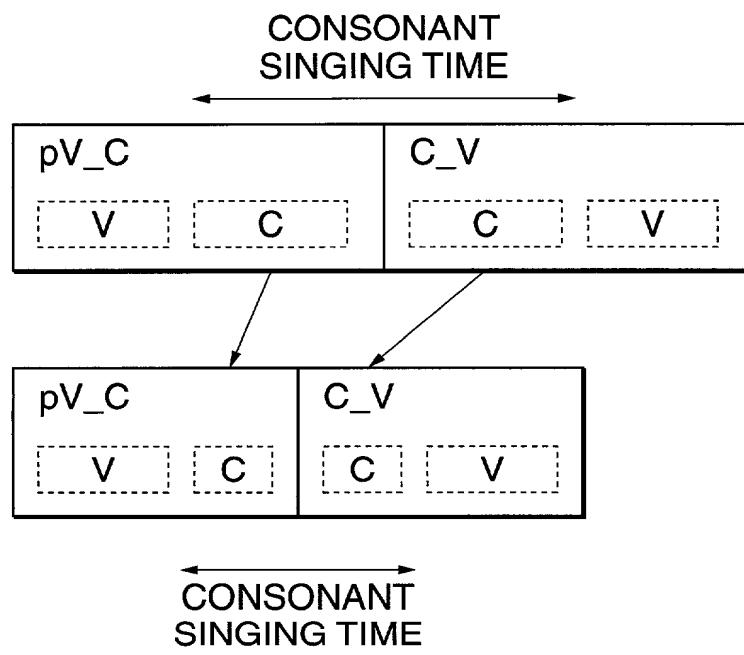
PRECEDING ACTUAL
SINGING END TIME

ACTUAL SINGING-
STARTING TIME

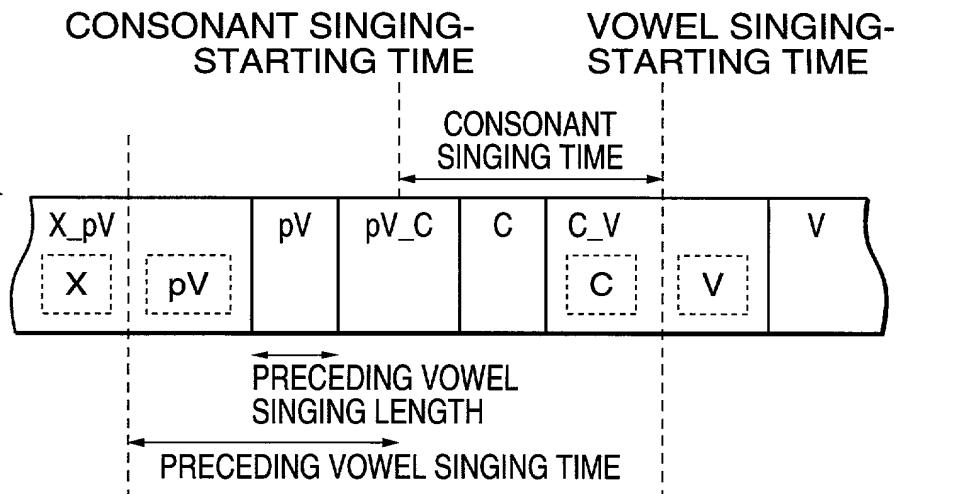
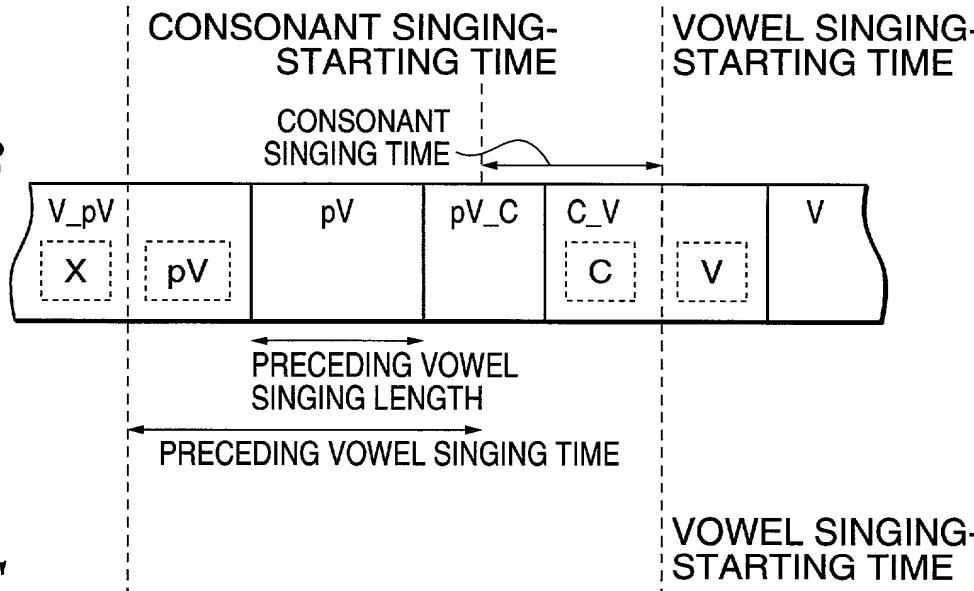
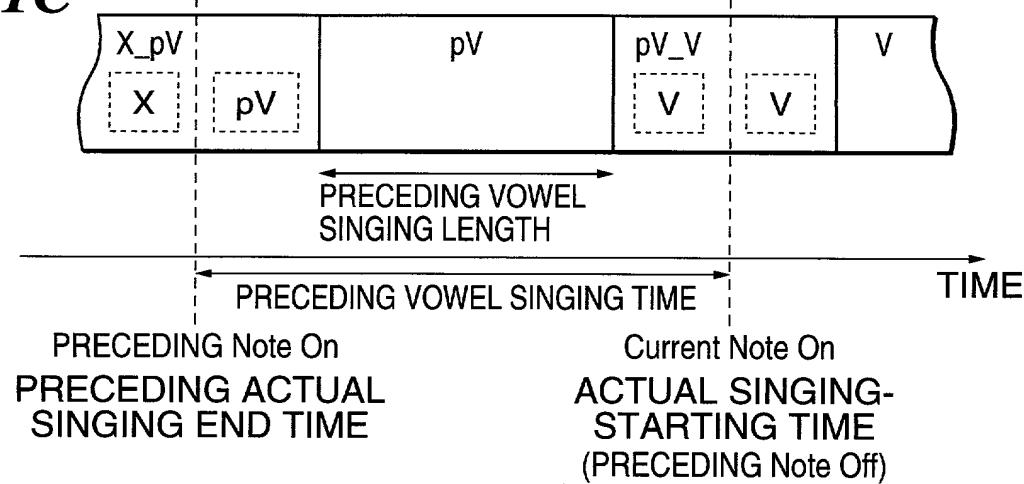
FIG. 28



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FIG. 29**FIG. 30**

+

FIG. 31A**FIG. 31B****FIG. 31C**

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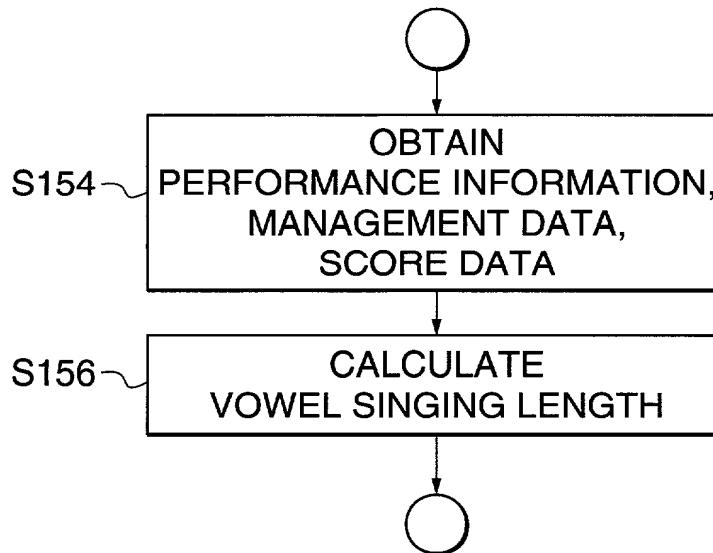
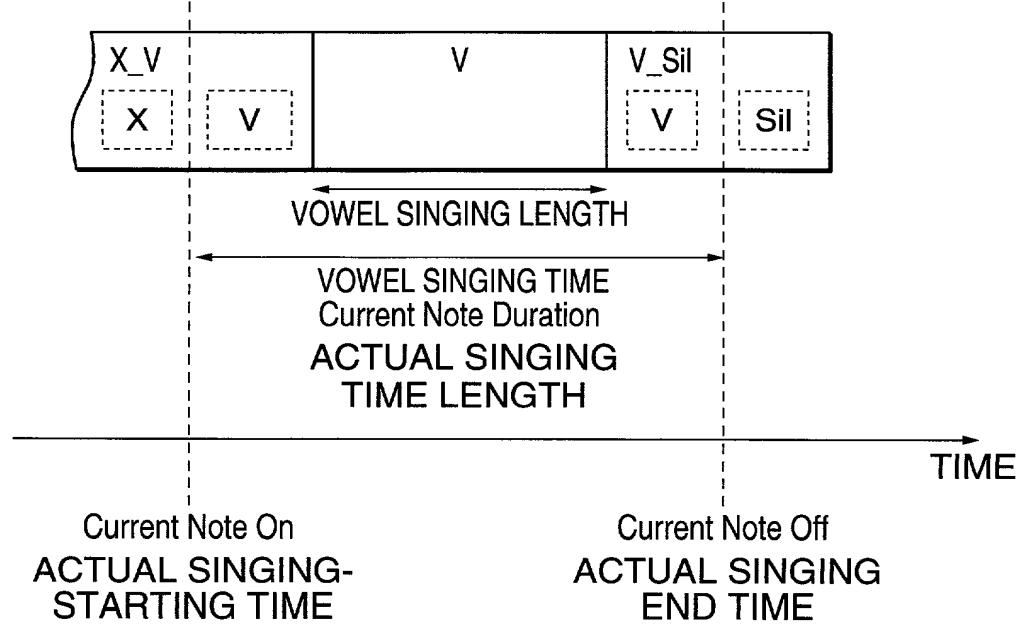
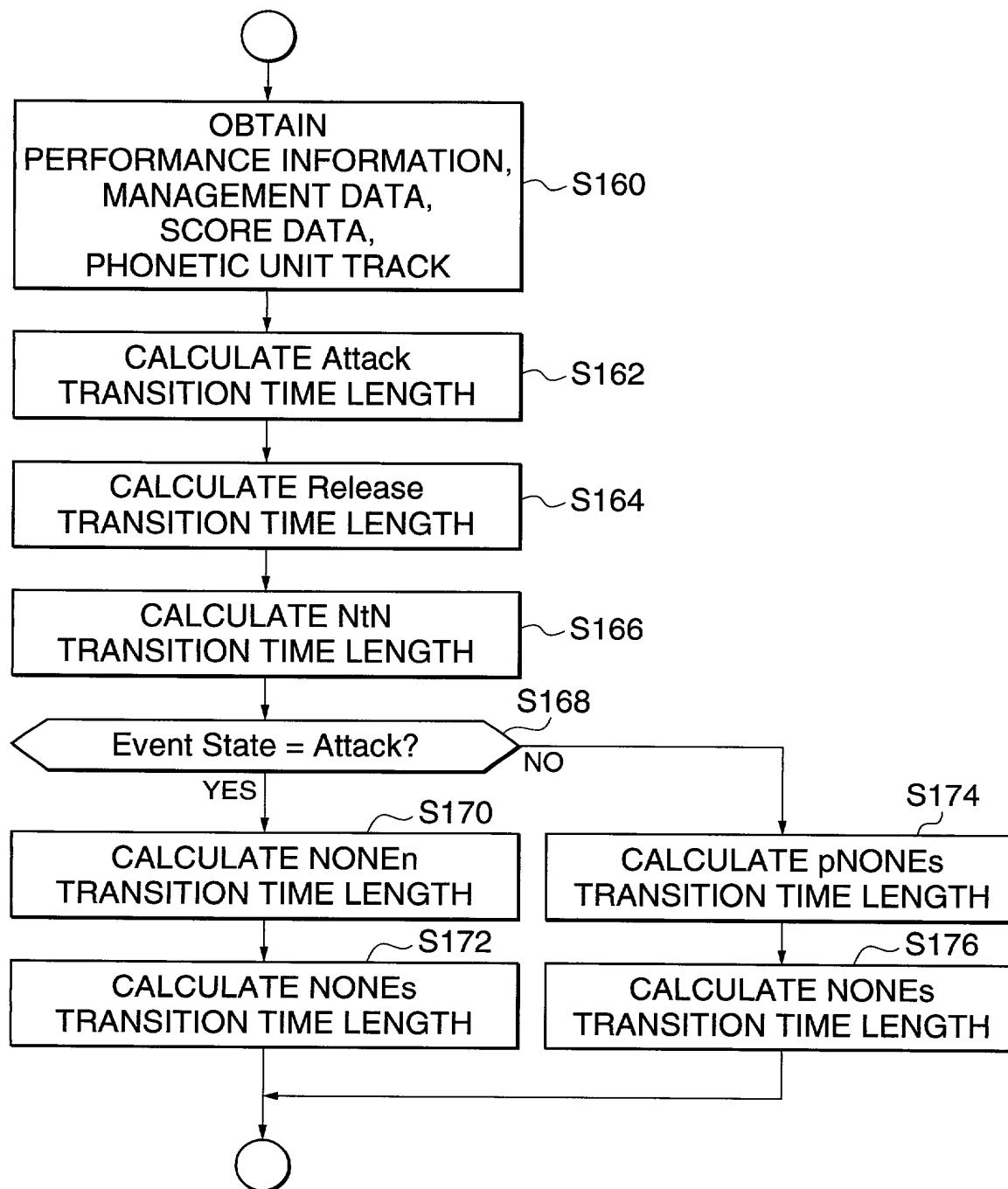
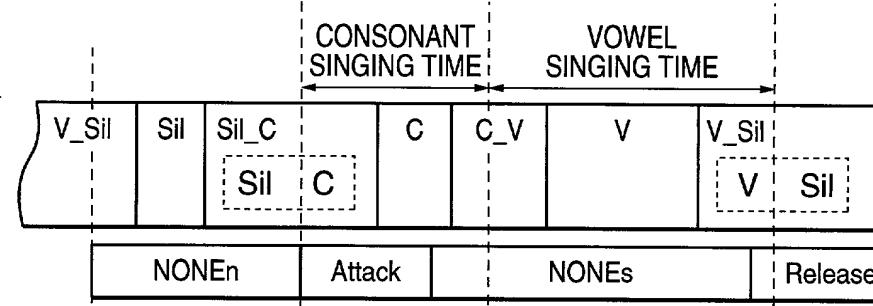
FIG. 32**FIG. 33**VOWEL SINGING-
STARTING TIME

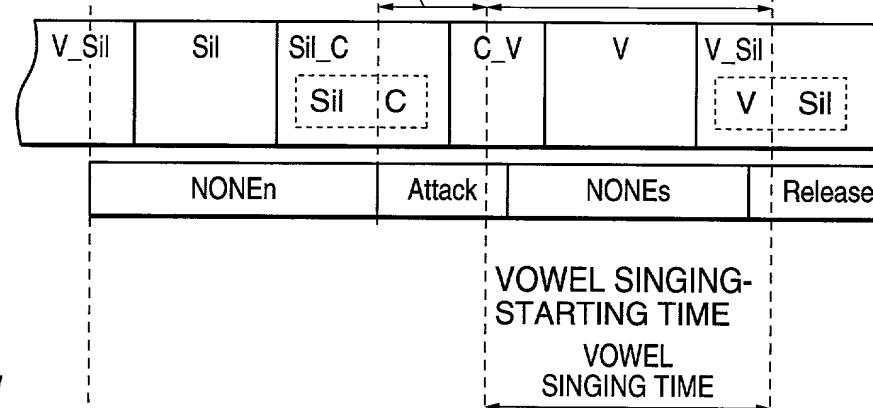
FIG. 34



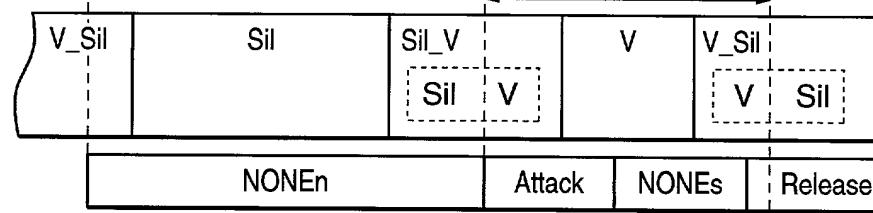
CONSONANT SINGING-
STARTING TIME VOWEL SINGING-
STARTING TIME

FIG. 35A

CONSONANT SINGING-
STARTING TIME VOWEL SINGING-
STARTING TIME

FIG. 35B

VOWEL SINGING-
STARTING TIME VOWEL
SINGING TIME

FIG. 35C

SILENCE TIME

Current Note Duration

TIME

ACTUAL
SINGING TIME
LENGTH

PRECEDING Note Off

Current Note On

Current Note Off

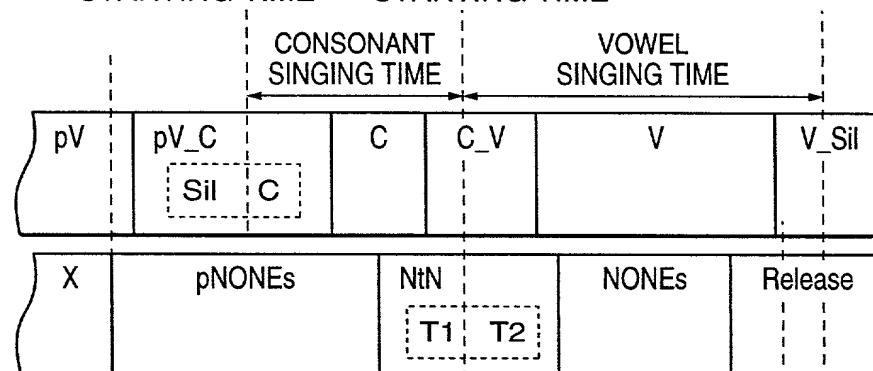
PRECEDING ACTUAL
SINGING END TIME

ACTUAL SINGING-
STARTING TIME

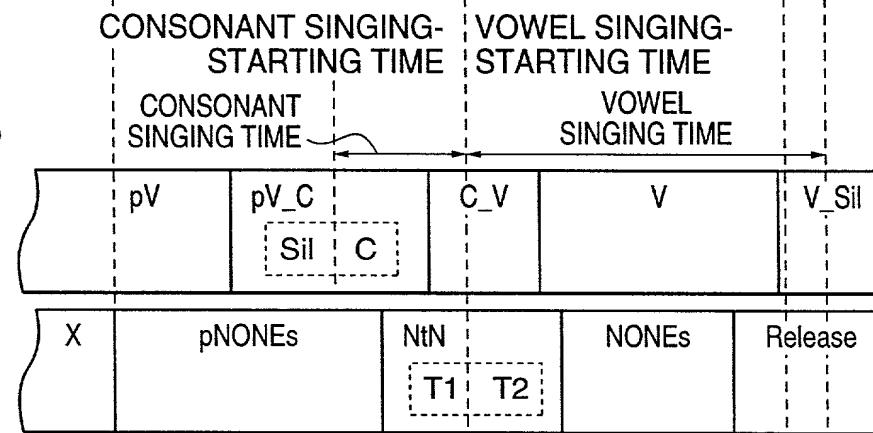
ACTUAL SINGING
END TIME

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CONSONANT SINGING-
STARTING TIME VOWEL SINGING-
STARTING TIME

FIG. 36A

CONSONANT SINGING-
STARTING TIME VOWEL SINGING-
STARTING TIME

FIG. 36B

VOWEL SINGING-
STARTING TIME
VOWEL
SINGING TIME

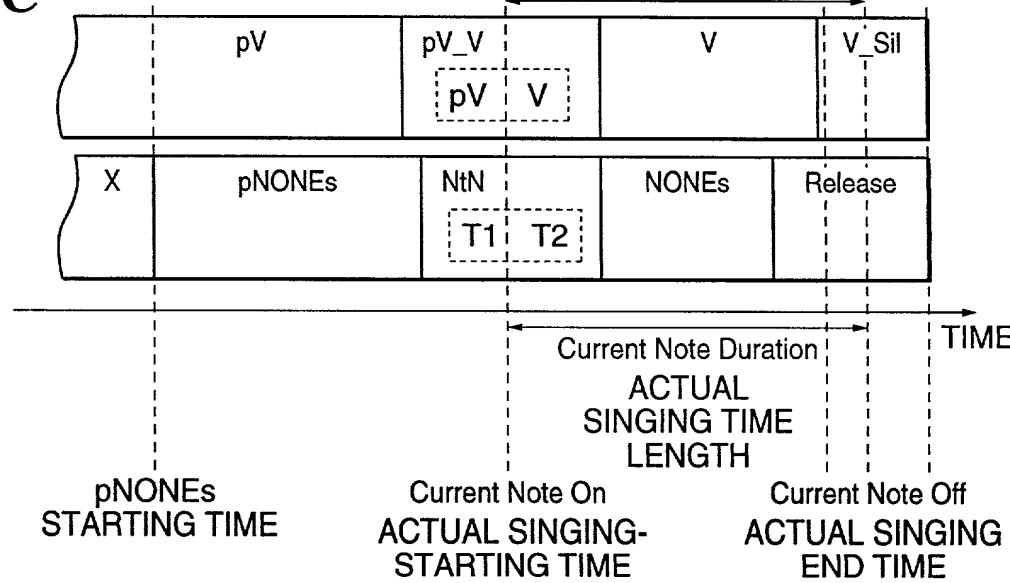
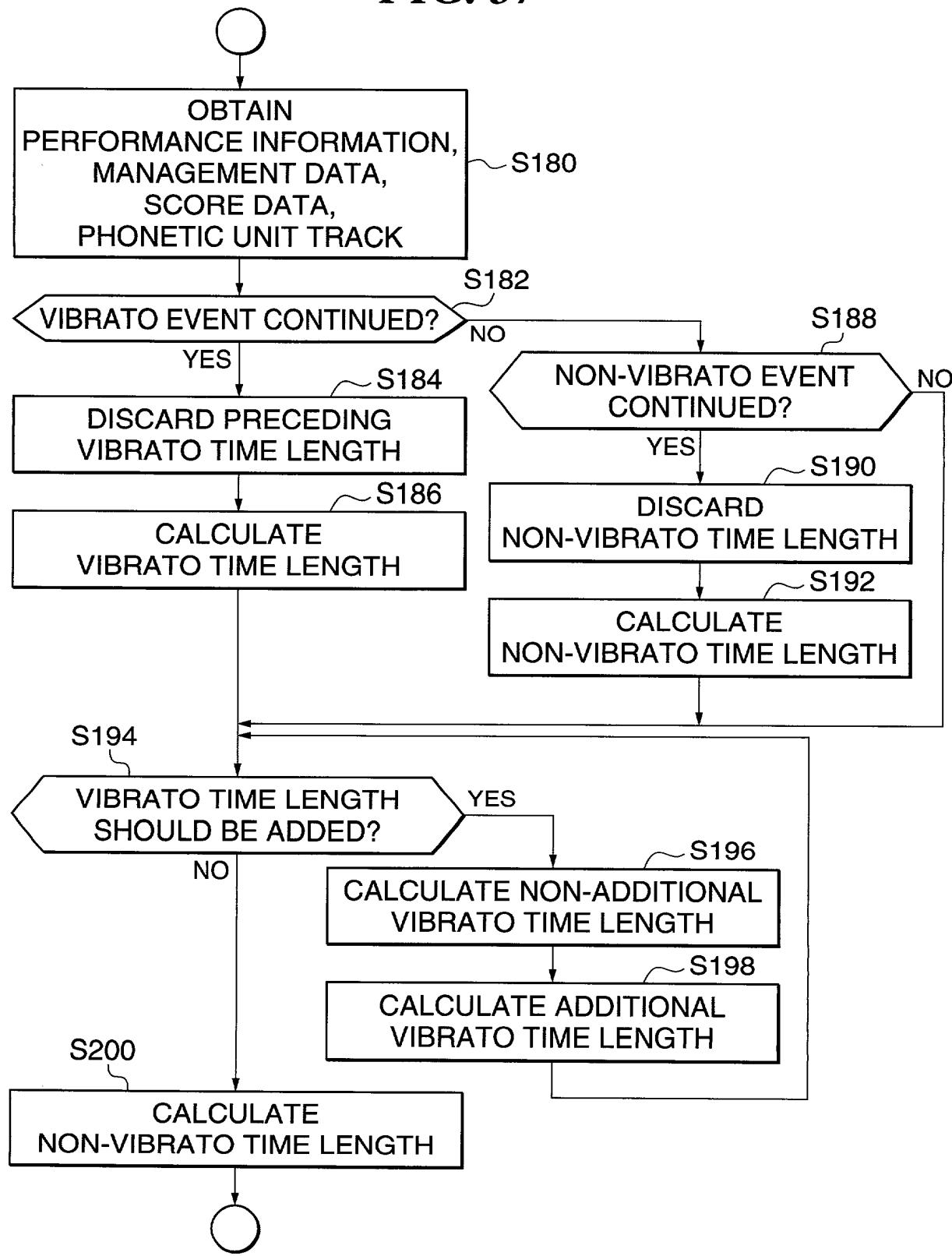
FIG. 36C

FIG. 37



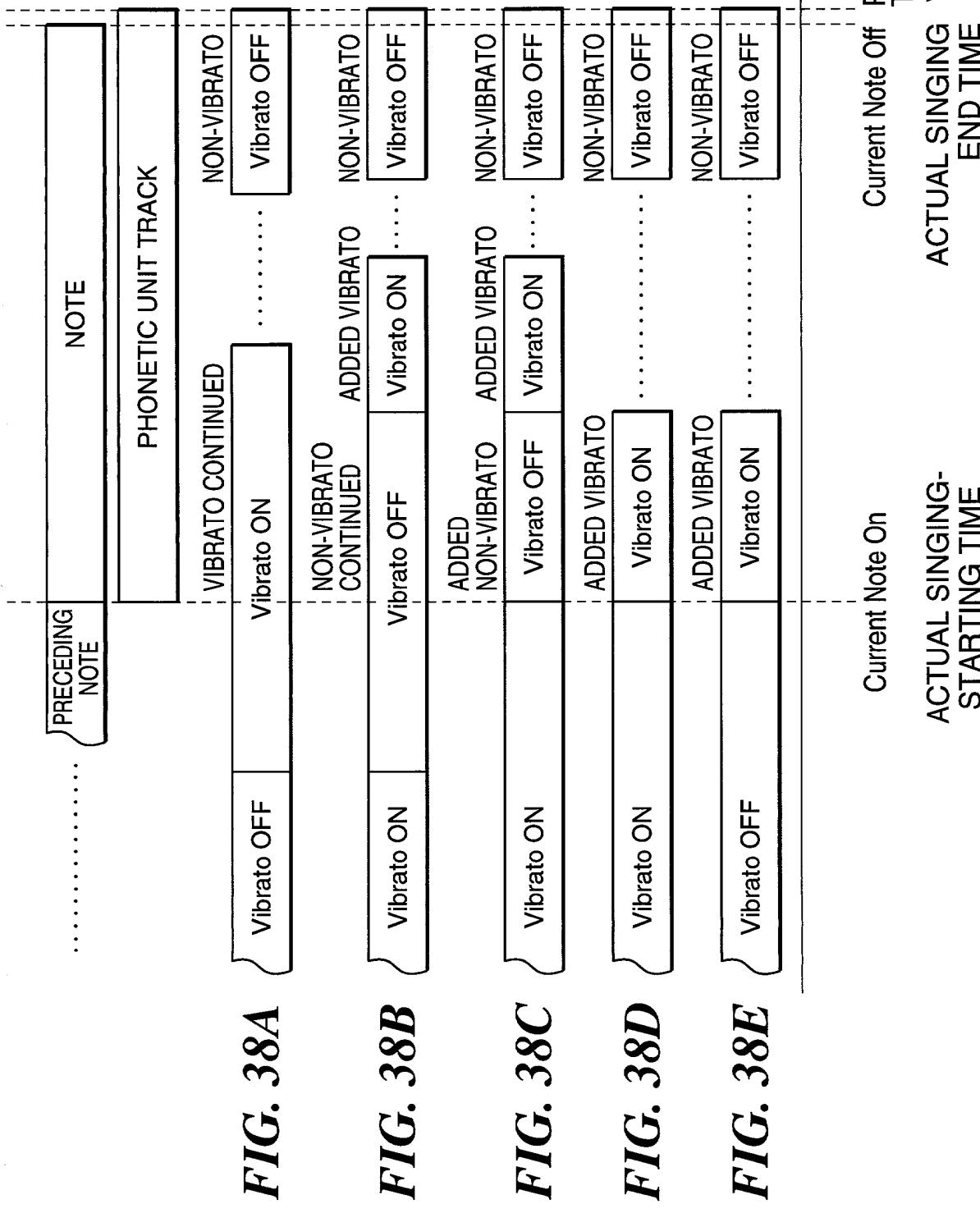


FIG. 39A
CONSONANT + VOWEL

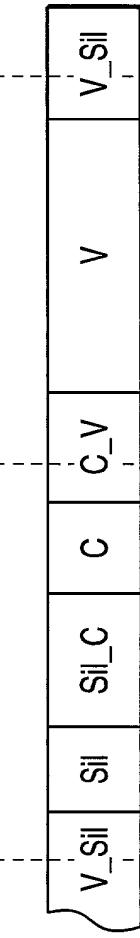


FIG. 39B
CONSONANT + VOWEL

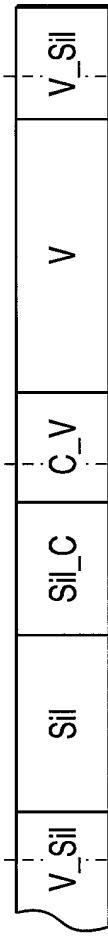


FIG. 39C
CONSONANT
(NASAL SOUND, HALF VOWEL) + VOWEL

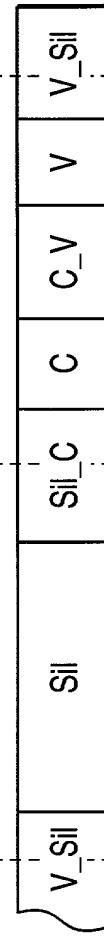


FIG. 39D
CONSONANT
(NASAL SOUND, HALF VOWEL) + VOWEL

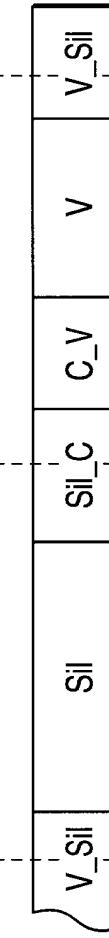
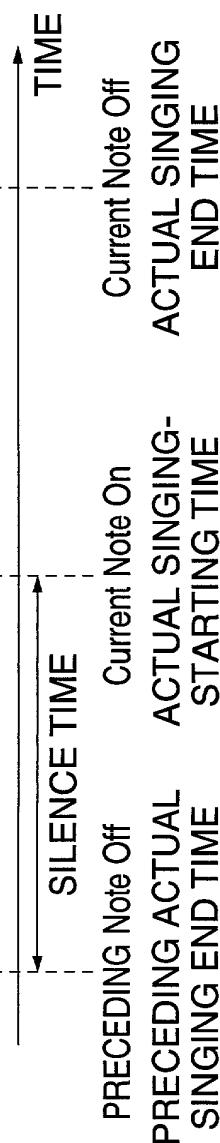
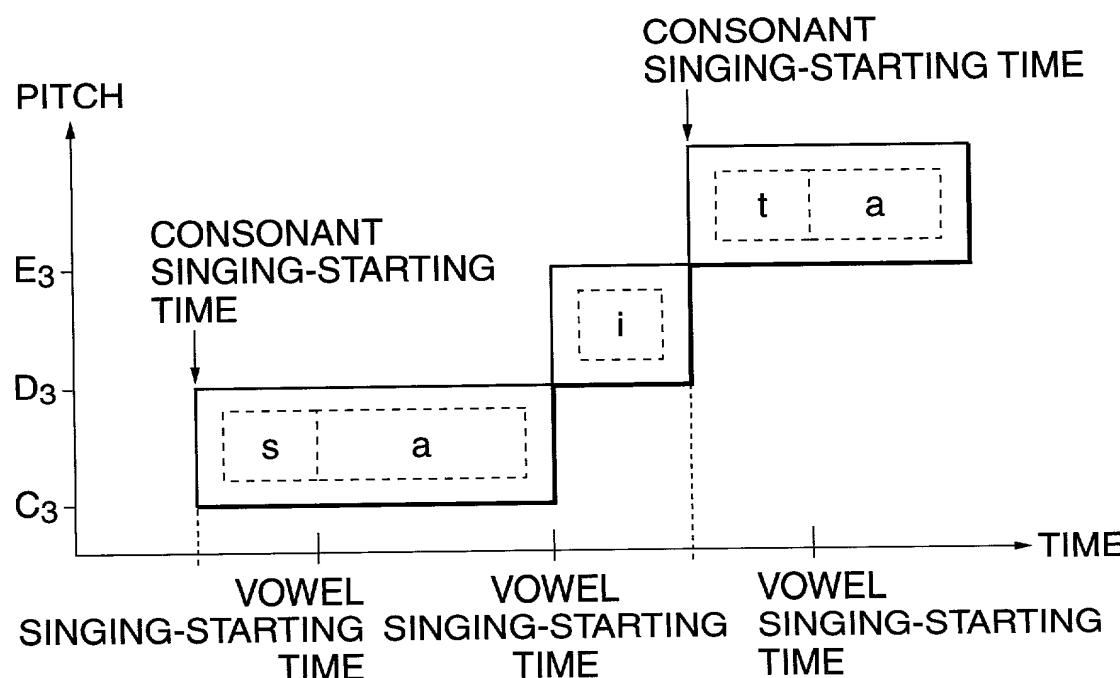


FIG. 39E
VOWEL ALONE
CONSONANT (NASAL SOUND) ALONE



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FIG. 40A**FIG. 40B**